User Manual

Installation and Operation

CH1700
CH7500
CH7600

Please read these instructions through carefully and entirely before beginning installation or operation.

This manual must be accessible to the owner/user of this Teleflex Marine product.

Mechanical Engine Controls

Patent No. D508,227; D510,310; D510,311; D510,557; D510,558; D510,559

CH7500

CH7600

CH1700

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ISCH7500_Rev2
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Teleflex® MARINE

Notice to Boat Manufacturer, Installer, and Boat Operator

Throughout this manual, Warnings and Cautions (accompanied by the International Hazard Symbol ⚠) are used to alert the manufacturer or installer to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly.

Warnings **alone** do **not** eliminate dangers, nor are they a substitute for safe boat handling and proper accident prevention measures.

Observe these alerts carefully!

These "safety alerts" alone, cannot eliminate the hazards that they signal. ***Strict compliance to these special instructions*** *when installing, operating or performing maintenance and using* ***common sense*** *are the most effective accident prevention measures.*

⚠ DANGER

Immediate hazards which WILL result in severe personal injury or death.

⚠ WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION

Hazards or unsafe practices which COULD result in injury, product and/or property damage.

NOTICE

Information that is important to proper installation, operation or maintenance, but is not hazard-related.

For example:

⚠ CAUTION ***Do not tighten cable hangers or clamps to the extent that they crush or stress the cables in any way. Doing so may impair the function of the cable.***

The information contained in this manual is believed to be accurate at the time of going to print but no responsibility, direct or consequential, can be accepted for damage resulting from the use of this information. The manufacturer reserves the right to make changes, without notice, to any of its products.

INTRODUCTION

This Teleflex Marine Control provides both shift and throttle operation for inboards, outboards, and inboard/outboards.

We recommended the use of Teleflex TFXtreme™ engine cables.

Control Features	Side Mount CH1700	Top Mount CH7500 / CH7600
Single Lever Shift and Throttle Operation	✓	✓
Neutral Throttle Warm-Up	✓	✓
Neutral Throttle Interlock	✓	**Option**
Neutral Safety Switch (to prevent starting in gear)	✓	✓
Friction Adjust Screw (to prevent throttle "creep")	✓	✓

Control Options

Trim Switch	Option	Option
Trim & Tilt Switch	Option	Option
Emergency Ignition Interrupt Switch & Lanyard	Option	*n/a*

Other Parts Required for Installation

Quantity	Part
2	**Control Cables** Check section 2 of installation instructions for routing and length. *Teleflex TFXtreme™ cables are recommended.*

Adaptability

Control Cable

This control will connect to ANY current 3300-/OEM-type control cable. A cable nest kit (also known as a quick-connect adapter; part #212151-001), which mates to the engine's shift and throttle cable, is included with this control. Unique cable nests, which are required for Mercury Gen II Engines only, are included with the control connection kit.

CONTROL FEATURES AND OPERATION

(Option Numbers correspond to diagrams below)

1. NEUTRAL THROTTLE WARM-UP BUTTON

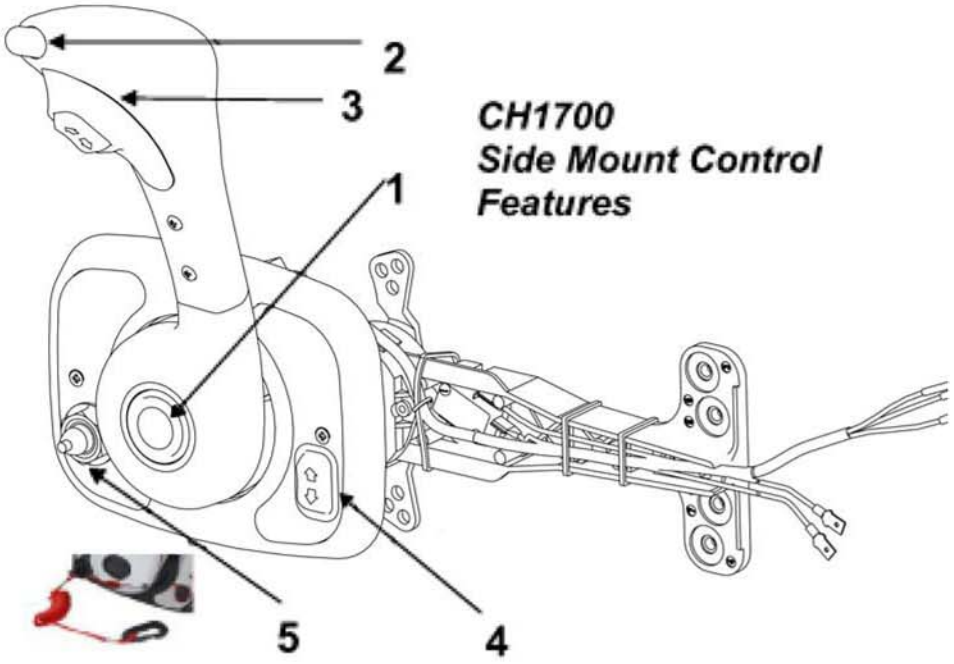
This feature provides a throttle only option to warm-up the engine before driving the boat

When the Control Hand Lever is in **Neutral**, push and hold the button at the base of the handle. While holding the button **(1)**, move the lever forward to throttle up the engine.

When you return the handle to the Neutral position, the button will reset automatically.

Once the button resets the hand lever will work both shift and throttle functions.

Note: On models with netural interlock you must depress both the Neutral Interlock (2) and the Neutral Warm-up Button (1) together and move the handle forward



CH1700 Side Mount Control Features

2. NEUTRAL INTERLOCK BUTTON

To prevent bumping the side mount control out of neutral, the button must be depressed and held to shift into forward or reverse.(option on top mount)

3. ENGINE TRIM SWITCH

Used to move the engine IN or OUT to level the boat while underway. **This switch controls trim and tilt on most outboards.**

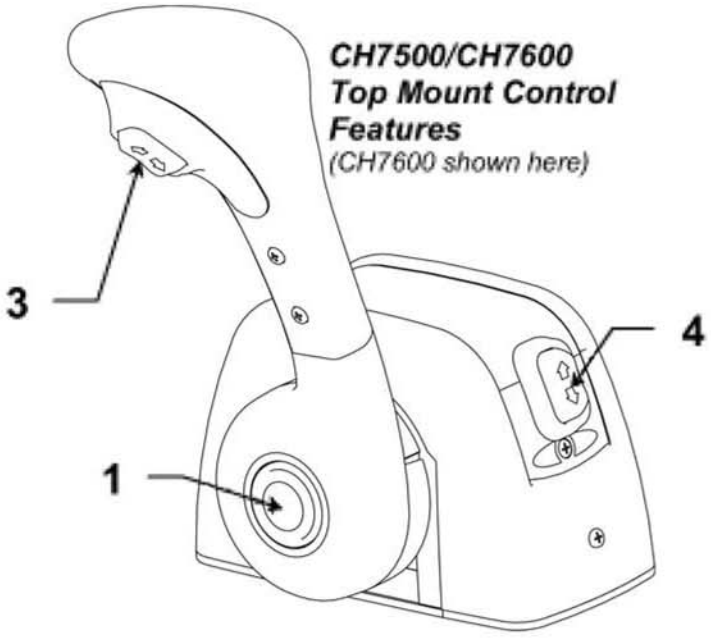
4. TRAILER TILT SWITCH

Used to raise the engine for trailering the boat. **This switch normally is used on I/O applications.**

5. *OPTIONAL* EMERGENCY IGNITION INTERRUPT SWITCH

(Used as a safety device)

To work as a safety device, the lanyard clip must be attached to the emergency ignition interrupt switch **(5)** and the lanyard (see photo) itself must be secured to the boat operator. If the clip is pulled free of the control, the engine will shut down.



CH7500/CH7600 Top Mount Control Features
(CH7600 shown here)

INSTALLATION

Section 1: Location of Control

1.1 Allow adequate clearance for hand lever swing (***forward*** and ***reverse*** positions).

1.2 Allow adequate clearance under the console or in the gunwale for the cables AND **allow a minimum of 36" from the cable nest connection with no restraint.** When supporting the cables beyond 36", do not tie or clamp tightly.

1.3 After a suitable location for the control is determined, use the separate mounting template.

1.4 Closely follow the instructions provided on the template. Cut & drill the mounting holes required.

On all models, the cover will have to be removed to expose the mounting holes.

Tools for Installation		
Phillips head screwdrivers	Power drill	5/8" or 16mm deep well socket
Standard slot screwdriver	7/32" & 17/64" drill bits	Ratchet wrench
Saber saw	3/8" box end wrench	
4¼ " Hole Saw (optional)	Multimeter (optional)	

Section 2: Measuring the Cables

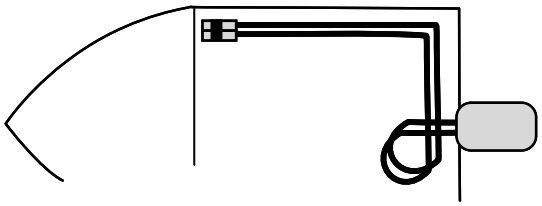
Measure the cable routing path from the control head connection to the engine connection.

Outboards:

Measure from the control connection -- along an unobstructed cable routing --to the center of the outboard engine.

Add four (4) feet to the measurement to allow for a loop which provides unrestricted engine movement. Round **UP** to the next whole foot and order the required cable part number.

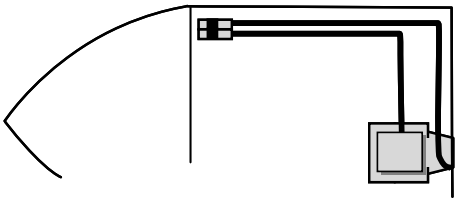
(Last two digits of the Teleflex cable number equal the length of the cable in feet.)



Inboards & Stern Drives:

Measure from the control connection -- along an unobstructed cable routing -- to the SHIFT or THROTTLE connection. Round this dimension **UP** to the next whole foot and order the required cable part number.

(Last two digits of the Teleflex cable number equal the length of the cable in feet.)



Section 3: Shift & Throttle Cable Connection - Control End

- ***PUSH*** / ***PULL*** refer to the direction of cable motion to shift into "forward" or to "open" the throttle
- Refer to the appropriate manufacturer's manual for shift and throttle direction and adjustments
- **Numbered holes on mechanism chassis correspond to holes in shift and throttle levers** (for example: connect cable mount to hole 4 on chassis and cable end fitting to hole 4 on lever)
- Cables and wiring should be pre-installed on control before final mounting is made

Cable Connection Guide

PUSH to OPEN THROTTLE

	CH1700/ CH7600		CH7500	
MANUFACTURER	CABLE NEST KIT	THROTTLE LEVER	CABLE NEST KIT	THROTTLE LEVER
MERCURY18 & 25 HP	# 1	# 1	# 1	# 1
JOHNSON / EVINRUDE	# 1	# 1	# 1	# 1
BRP/OMC I/O	# 1	# 1	# 1	# 1
YAMAHA 90HP & UP	# 1	# 1	# 1	# 1
US MARINE	# 1	# 1	# 1	# 1
SUZUKI	# 1	# 1	# 1	# 1

PULL to OPEN THROTTLE

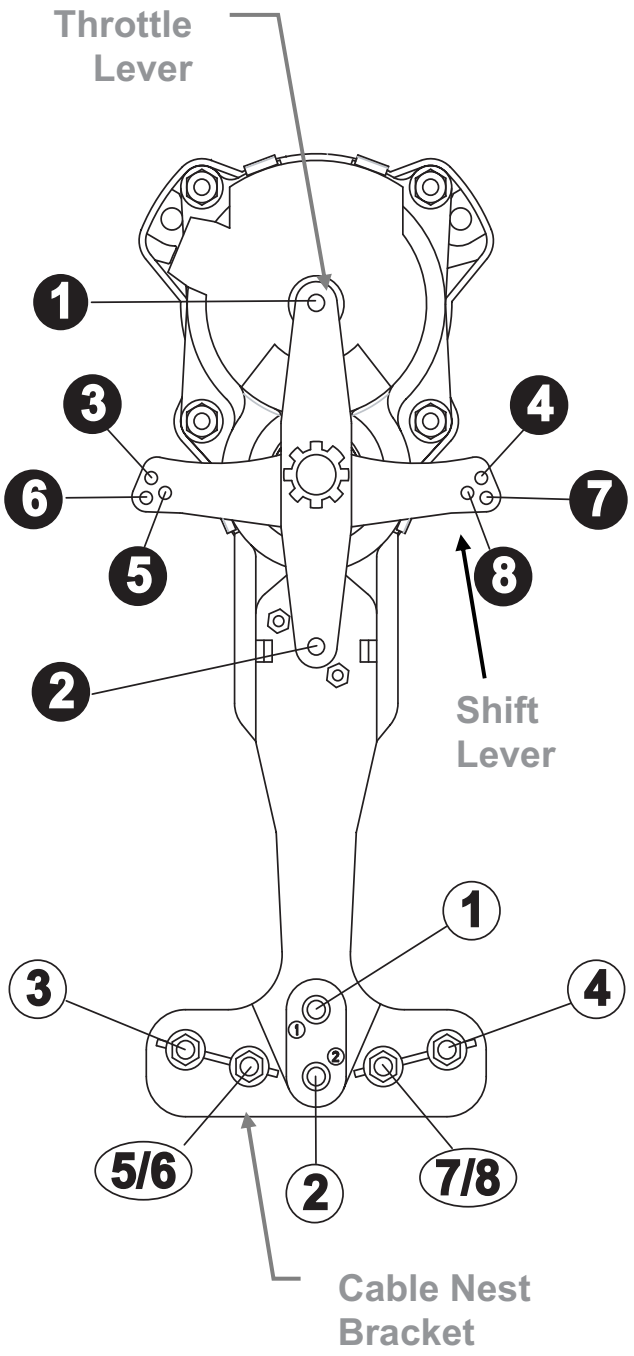
	CH1700/ CH7600		CH7500	
MANUFACTURER	CABLE NEST KIT	THROTTLE LEVER	CABLE NEST KIT	THROTTLE LEVER
MERCURY I/O & O/B	# 2	# 2	# 2	# 2
VOLVO I/O	# 2	# 2	# 2	# 2
YAMAHA 70HP & UNDER	# 2	# 2	# 2	# 2
HONDA	# 2	# 2	# 2	# 2
NISSAN/TOHATSU	# 2	# 2	# 2	# 2

PUSH for FORWARD SHIFT

	CH1700/ CH7600		CH7500	
MANUFACTURER	CABLE NEST KIT	SHIFT LEVER	CABLE NEST KIT	SHIFT LEVER
VOLVO I/O & INBOARDS	# 3	# 3	# 4	# 4
3300 CABLES	# 3	# 3	# 4	# 4
MERCURY18 & 25 HP	# 5/6	# 6	# 7/8	# 7
EVINRUDE / JOHNSON	# 5/6	# 5	# 7/8	# 8
INBOARDS	# 3	# 3	# 4	# 4

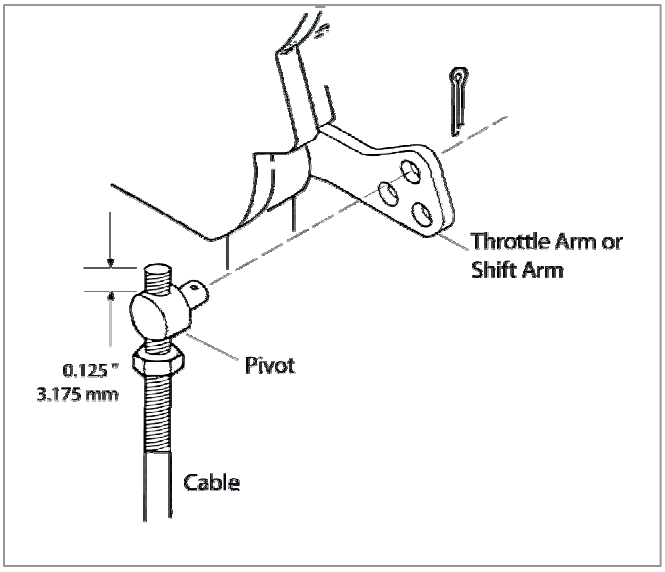
PULL for FORWARD SHIFT

	CH1700/ CH7600		CH7500	
MANUFACTURER	CABLE NEST KIT	SHIFT LEVER	CABLE NEST KIT	SHIFT LEVER
3300 CABLES	# 4	# 4	# 3	# 3
MERCURY	# 7/8	# 7	# 5/6	# 6
EVINRUDE/JOHNSON	# 7/8	# 8	# 5/6	# 5
HONDA/NISSAN/SUZUKI	# 4	# 4	# 3	# 3
TOHATSU/ US MARINE	# 4	# 4	# 3	# 3
YAMAHA	# 4	# 4	# 3	# 3
INBOARDS	# 4	# 4	# 3	# 3

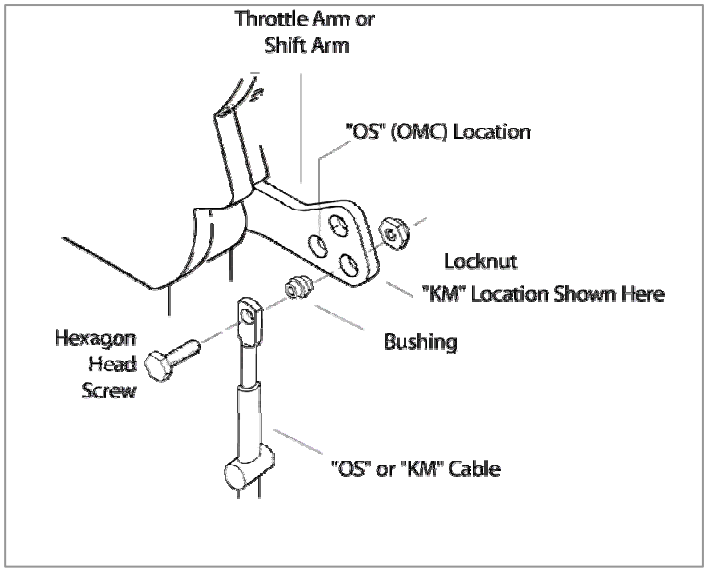


Cable Mounting Diagram

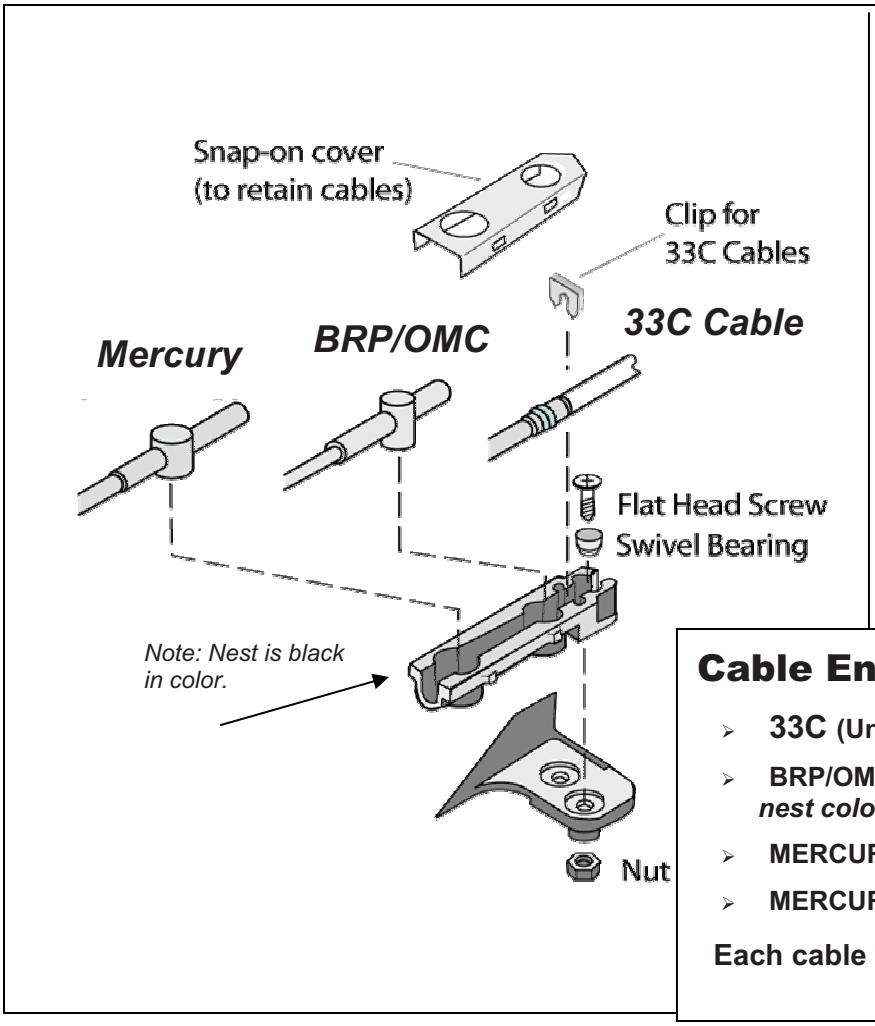
Section 3: Shift & Throttle Cable Connection - Control End

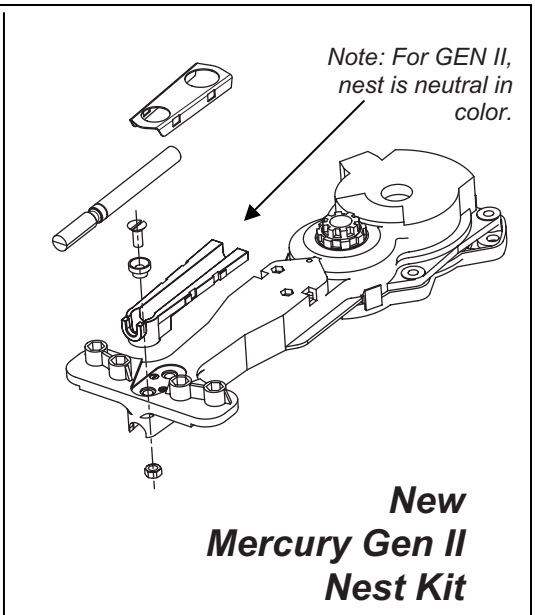


Shift Arm Cable Terminal Connection for 33 C Cable



Shift Arm Cable Terminal Connection for "OS" is BRP/OMC/Johnson and Evinrude and "KM" is Mercury





New Mercury Gen II Nest Kit

Cable End Options

- **33C (Universal)** ***(note black nest color)***
- **BRP/OMC/JOHNSON/EVINRUDE** ***(note black nest color)***
- **MERCURY (note black nest color)**
- **MERCURY GEN II** ***(note neutral nest color)***

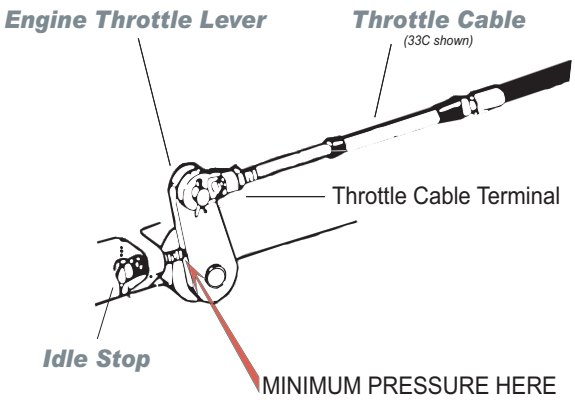
Each cable type connects differently.

Section 4: Shift & Throttle Cable Connection - Engine End

The throttle cable must be disconnected from the motor before making motor idle adjustments.

⚠ Caution

Adjustment of the motor idle while the throttle cable is connected to the motor may cause jamming action against the idle stop. As a result, the control may not function properly and damage to the control, the cable and/or the motor may occur.



4.1 Make sure the Control is in ***NEUTRAL DETENT***.

4.2 The Engine Throttle Lever should rest lightly against the "Idle Stop" on the carburetor.

4.3 Connect the Throttle Cable to the Engine Throttle Lever.

Please Note: This figure does not represent any particular engine.

NOTICE

Throttle Cable must be free of load (NO LOAD) when throttle lever is in the idle position to prevent hard shifting.

Section 5: Electrical Connections

5.1 Neutral Safety Switch

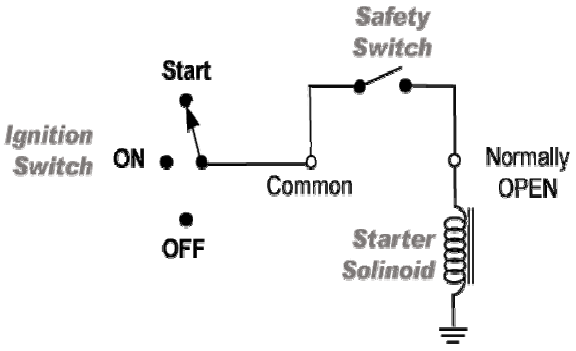
This control is provided with a Neutral Safety Switch. This switch is used to prevent the engine from starting in gear.

NOTICE

Use a battery-powered test light or test meter to check continuity.

5.1.1 With the Control in NEUTRAL, connect one wire of the tester to the common terminal, and one wire to the "NO" (Normally Open) Terminal. The test light MUST light.

5.1.2 Connect the neutral safety switch between the ignition switch (start lead) and the starter solenoid



Use a multi-meter or continuity tester to make sure that there is electrical continuity only when the control is in neutral position. When the control is in forward or reverse gear there must not be electrical continuity. The multimeter or tester should show an open circuit.

⚠ Caution

5.2 Trim and Tilt

Refer to the wiring diagrams (below) for the correct "Trim" and "Tilt" switch connections and wire accordingly.

NOTICE

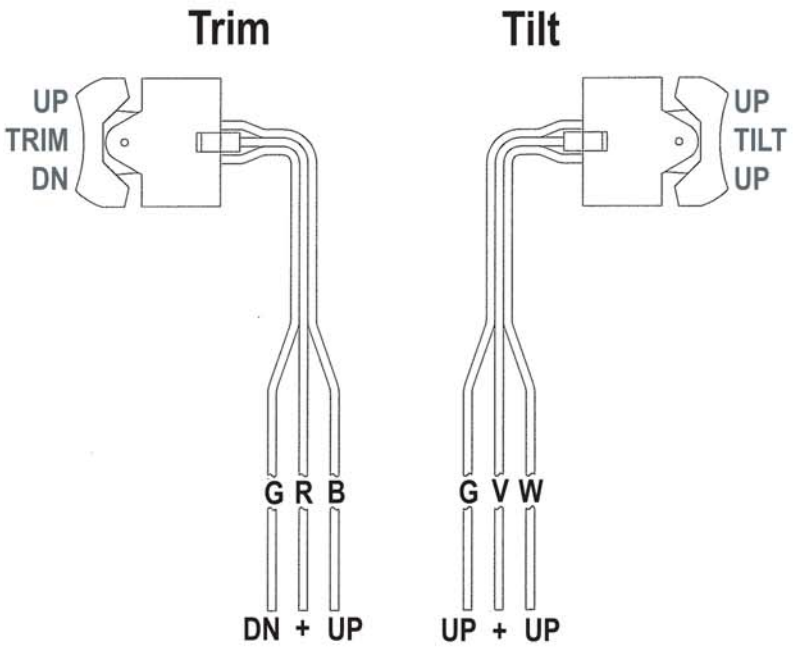
On both 3-wire AND 5-wire systems: reverse the blue and green connections for opposite "trim" operation.

ABBREVIATIONS

DN = DOWN
UP = UP

COLOR KEY

B = BLUE
G = GREEN
V = VIOLET
R = RED
W = WHITE

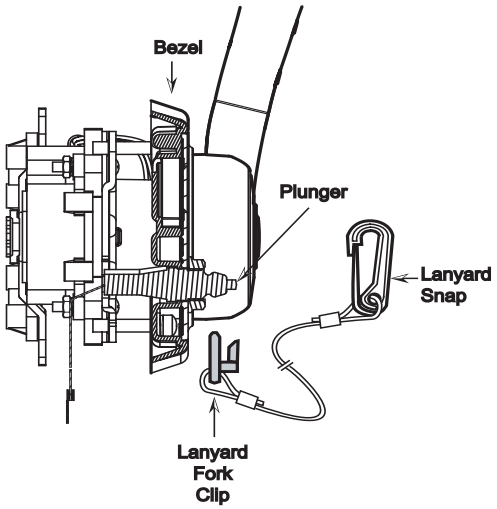


NOTE for Tilt:

1. Connect WHITE and GREEN together.
2. Connect VIOLET to power.
3. Not all engines are wired the same, especially older engines. Check with the engine manufacturer for wiring specifications.
4. Use either the upper or lower Tilt switch to bring Tilt UP. To bring Tilt DOWN, use Trim DOWN switch.

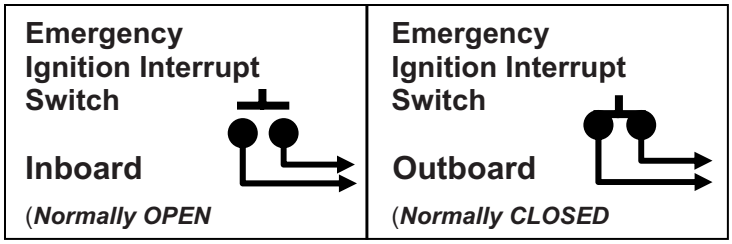
5.3 Ignition Interrupt Switch

This switch includes a lanyard clip which holds the plunger of the Switch in position to allow engine operation. A lanyard extends from the clip and is connected securely to the operator. If the operator moves away from the controls, the clip is pulled free, releasing the plunger and stopping the engine.



5.3.1 Operation of the Ignition Interrupt Switch

- Before each motor start, check that the Lanyard Fork Clip is properly seated over the switch and rotates freely.
- Inspect the lanyard. If it is cut, worn or frayed, it must be replaced.
- Start the engine.
- Test the switch by pulling the lanyard fork clip free from the switch. The engine should stop.



⚠WARNING

If engine fails to stop, recheck all wiring. Should the engine fail to start or stop, or resume running with the lanyard fork removed, consult your local marine dealer for assistance. Do not change the length of the lanyard or use another manufacturer's lanyard on this interrupt switch. Either may affect switch operation. Misuse, misapplication, unauthorized modifications, or incorrect installation of this safety devise could result in serious bodily injury or death.

5.3.2 Installation Instructions for the Ignition Interrupt Switch

All wiring, connections and terminations should be done in accordance with ABYC Spec E 11-03.

Before drilling, check behind the gunwale or panel for sufficient clearance and space around wires tubes, pipes and other obstructions.

- If installing the switch as a retro fit, remove the 4 mounting screws that retain the bezel. Remove the bezel. Overlay the cutout template supplied in the kit. If the cutout profile does not match the template, cutout the gunwale to suit the template profile.
- If installing the control for the first time, use the template to cutout the gunwale.
- Insert the switch from the rear of the gunwale or from the front. Your choice will depend on the design of your boat and access to the cavity between to hull and the gunwale.
- Orient the switch according to the diagram before inserting the switch into the space provided in the control mounting plate, the cutout and into the bezel.
- Insert the 4 mounting screws through the bezel cutout and into the control mounting plate.
- Assemble the bezel Insert onto the bezel and add the Interrupt Switch retaining nut. Torque to 40 – 50 inch pounds (3.5 to 4 foot-pounds)
- Insert the lanyard clip under the Interrupt Switch plunger. Pull firmly on the lanyard to verify that the clip snaps free. Ensure the nut remains tight, re-torque if necessary. Reattach the lanyard clip to the switch.
- Complete the Interrupt Switch wiring into the engine electrical circuit according to the instructions below.
- Complete all testing of the Interrupt Switch function according to the instructions on the following page(s).

5.3.3 Electrical Connections: I/O or Inboard Use

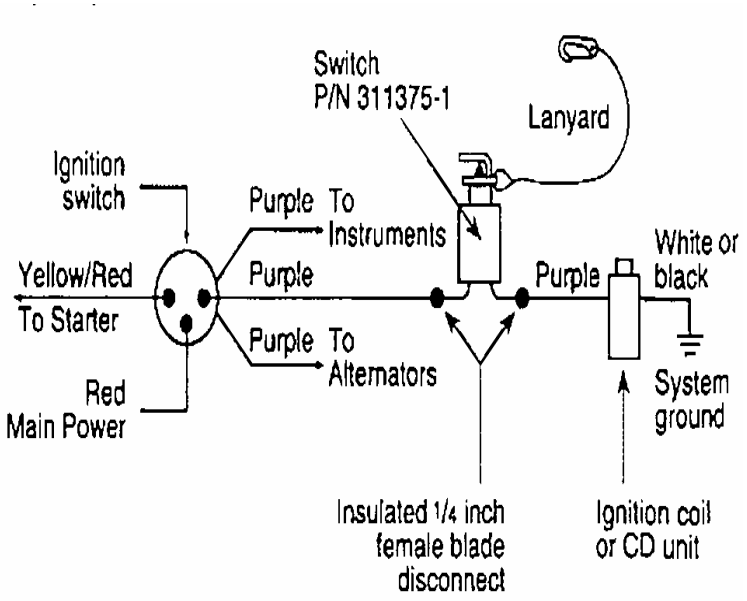
Use 16 AWG Purple stranded, insulated marine quality wire for IO or inboard applications. (Type HDT, THW, UL 1426 or equivalent.)

WARNING

Be sure this wire goes directly to the coil and not to the instrument or alternator circuit. Selecting the incorrect wire will result in improper switch operation which could lead to serious injury.

I/O or Inboard Use ONLY (Normally OPEN)	
1.	Disconnect all batteries and any auxiliary on-board or dockside power supplies.
2.	Locate the purple ignition switch-to-coil wire; See Diagram A below.
3.	Cut the purple wire, strip the ends and install two (2) insulated crimp-on 1/4 inch female disconnect terminals. A crimping tool designed for insulated terminals MUST be used.
4.	Attach the female disconnects to each of the male terminals on the Interrupt Switch
5.	Recheck all connections.
6.	Install Lanyard with the Fork Clip seated on the Plunger.
7.	Reconnect battery.
8.	Start engine. If engine does not start: disconnect battery, recheck all electrical connections, reconnect battery, and restart engine.
9.	Remove Lanyard. Engine should stop immediately.

Diagram A
I/O and Inboard Wiring
(basic wiring; no specific manufacturer)



5.3.4 Electrical Connections: Outboard Use

Outboard Use ONLY (Normally CLOSED)

Use 16 AWG Black stranded, insulated marine quality wire for all outboard applications. (Type HDT, THW, UL 1426 or equivalent.)

1.	Disconnect all batteries and any auxiliary on-board or dockside power supplies.
2.	Remove Engine Cover
3.	Locate the correct color emergency stop wire for your motor. (See Reference Table 1 at right.)
4.	Measure and cut two lengths of black 16 AWG marine quality wire of sufficient length to connect one Interrupt Switch terminal to the Emergency Stop Wire and the other terminal to a System Ground. (See Diagram B at right.)
5.	Strip one end of each wire and crimp on an insulated 1/4 inch female disconnect terminal. A crimping tool designed for insulated terminals MUST be used.
6.	Attach the female disconnects to each of the male terminals on the Interrupt Switch.
7.	Attach the other end of one wire to the Emergency Stop Wire, using a suitable insulated wire connecting device. (See Reference Table 1 and Diagram B.)
8.	Attach the other end of the second wire to the ground point, using a suitable insulated wire connection device as shown in Diagram B at right.
9.	Recheck all connections. Install the Lanyard with the Fork Clip seated over the Plunger
10.	Replace engine cover and reconnect battery.
11.	Start engine. If engine does not start: a) disconnect battery; b) remove engine cover; c) recheck all electrical connections; d) replace engine cover; and e) restart engine. Remove Lanyard. Engine should stop immediately

⚠ CAUTION

This interrupt switch is designed for use with outboard motors equipped with grounding type emergency stop circuits only!

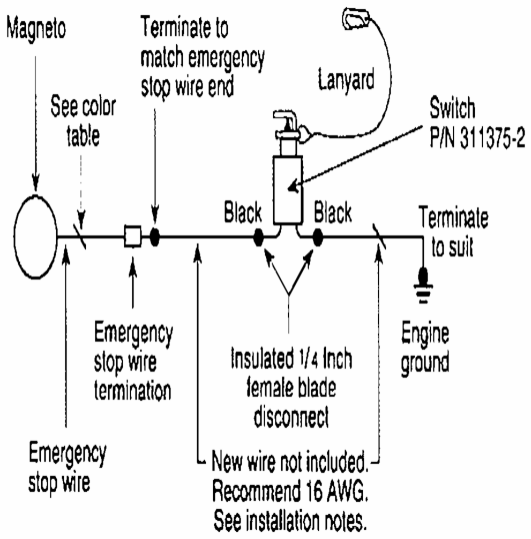
Reference Table 1

Wire Color Table for Late Model Outboards

Engine	*Color*
Daihatsu	Solid Brown
Evinrude	Black w/ Yellow Stripe
Before 1969	Solid Blue
Force	Solid White
Johnson	Black w/ Yellow Stripe
Before 1969	Solid Blue
Mariner	Black w/ Yellow Stripe
Mercury	Black w/ Yellow Stripe
Nissan	Solid Brown
OMC	Black w/ Yellow Stripe
Before 1969	Solid Blue
Suzuki	Solid Brown
US Marine	Blue w/ Black Stripe or Solid Blue
Yamaha	Black w/ Yellow Stripe

Diagram B

Outboard Wiring

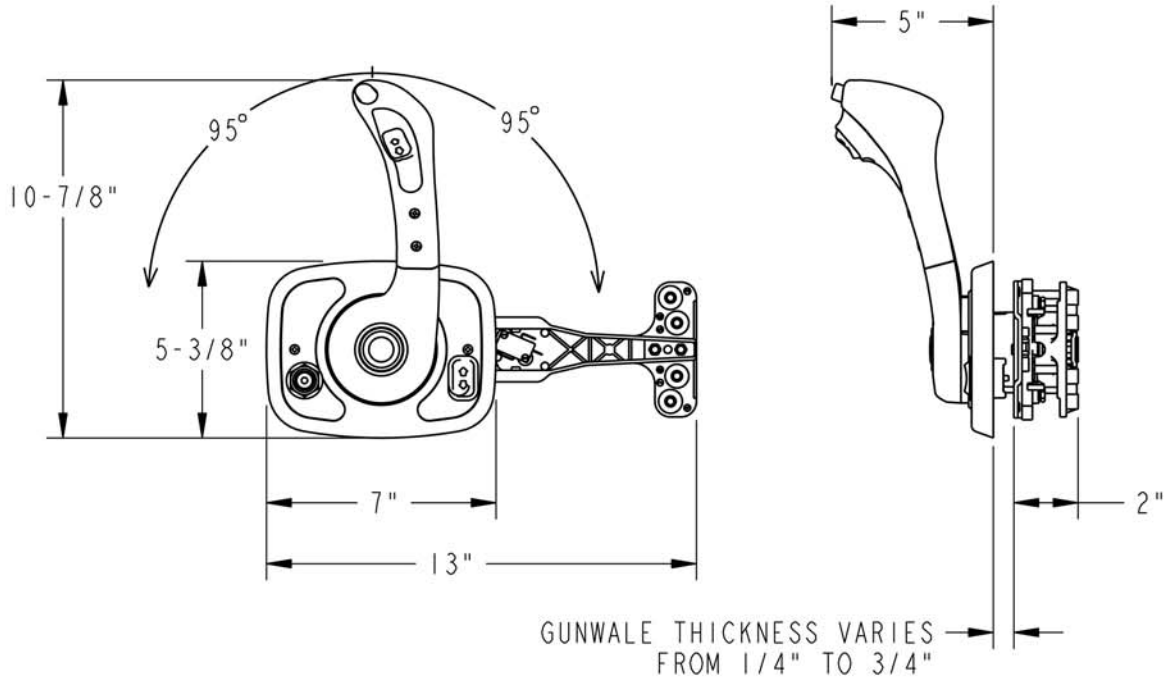


⚠ CAUTION

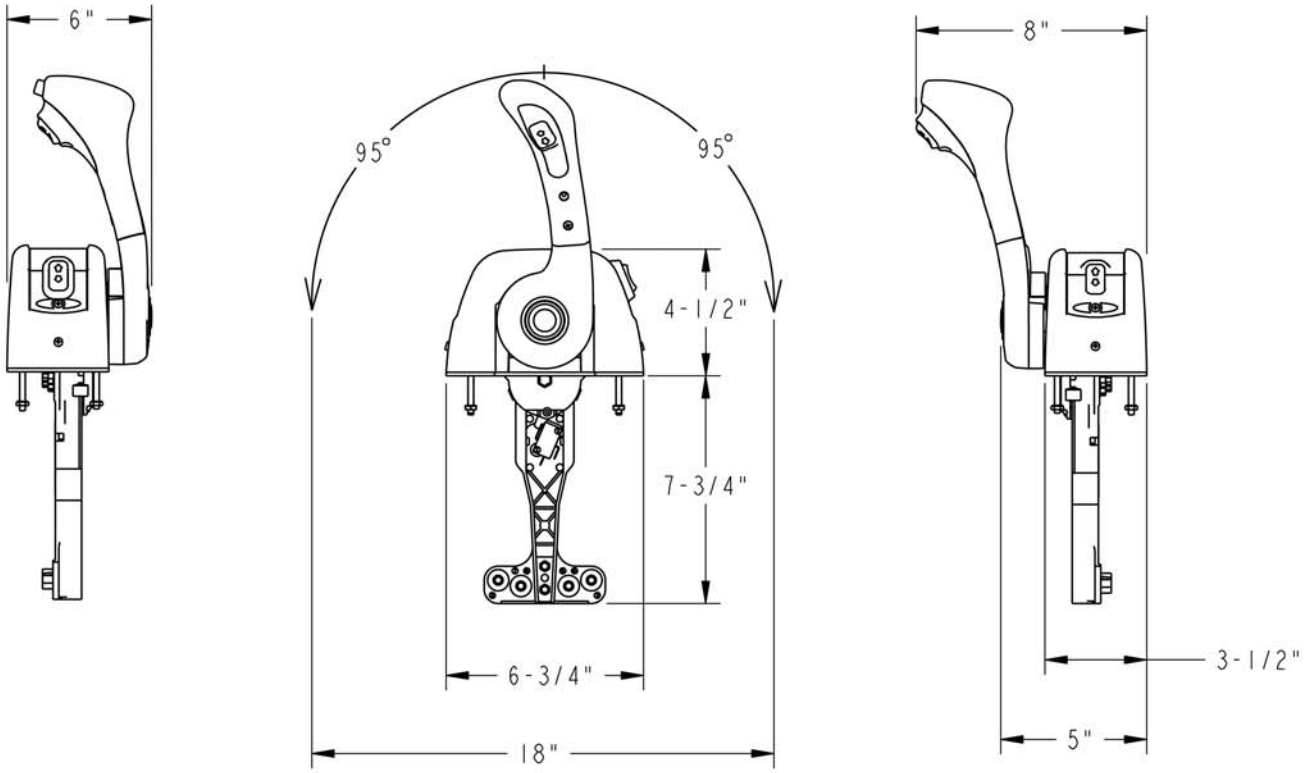
If engine fails to stop, recheck all wiring. Should the engine fail to start or stop or resume running with the lanyard fork removed, consult your local marine dealer for assistance.

General Control Dimensions

CH1700: Side-Mount Control General Dimensions



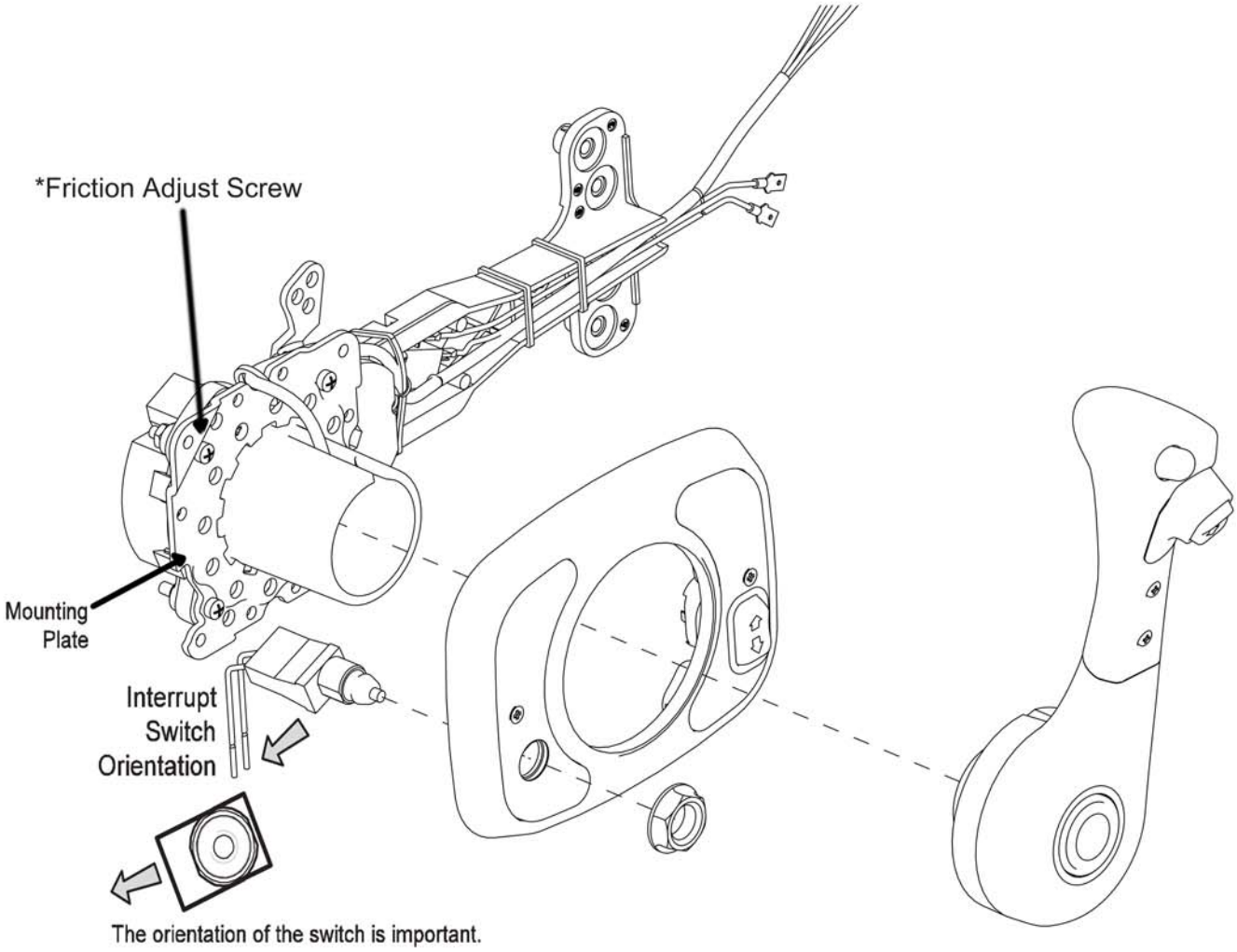
CH7500/7600: Top-Mount Control General Dimensions



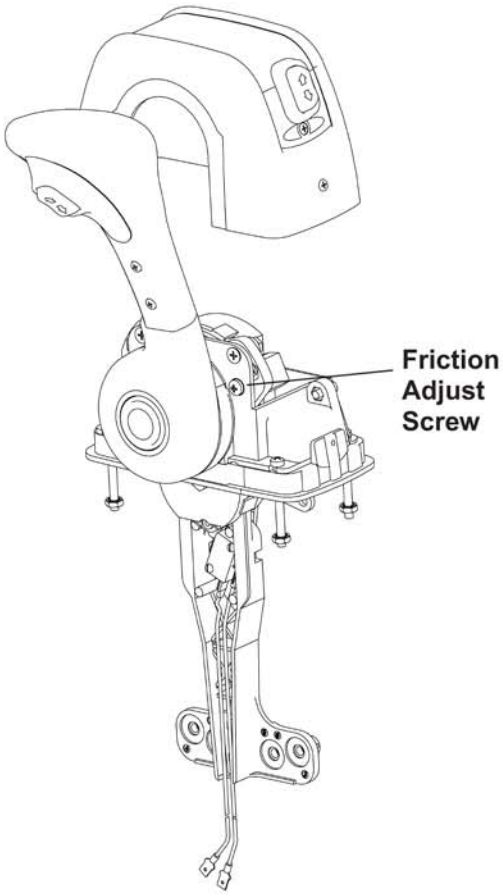
Exploded View CH1700

Friction Adjust Screw

Adjustment of this screw enables the friction in the throttle operating mechanism to be increased and prevent unwanted handle movement. To adjust, place the lever in the forward or reverse throttle position (just beyond the shift position). Remove the cover and adjust the friction adjust screw; turning the screw clockwise increases the friction. Do not over-tighten.



Exploded View CH7500/7600



Friction Adjust Screw

Adjustment of this screw enables the friction in the throttle operating mechanism to be increased and prevent unwanted handle movement.

To adjust, place the lever in the forward or reverse throttle position (just beyond the shift position). Remove the cover and adjust the friction adjust screw; turning the screw clockwise increases the friction. Do not over-tighten.

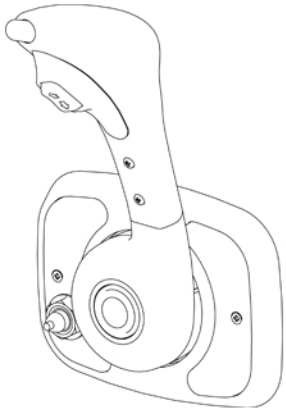
Maintenance and Corrosion Protection

- For maximum protection, especially in a saltwater environment, the control head and hand lever should be washed lightly with fresh water on a regular basis.
- Periodically check the control head mechanism for loose fasteners and signs of wear on moving parts.
- Keep moving parts well lubricated with a moisture-displacing lubricant.
- Periodically check the cables and engine connections for signs of wear and corrosion. Replace as necessary.

SERVICE PARTS KITS

All service parts can be purchased from your local Teleflex Marine Distributor.

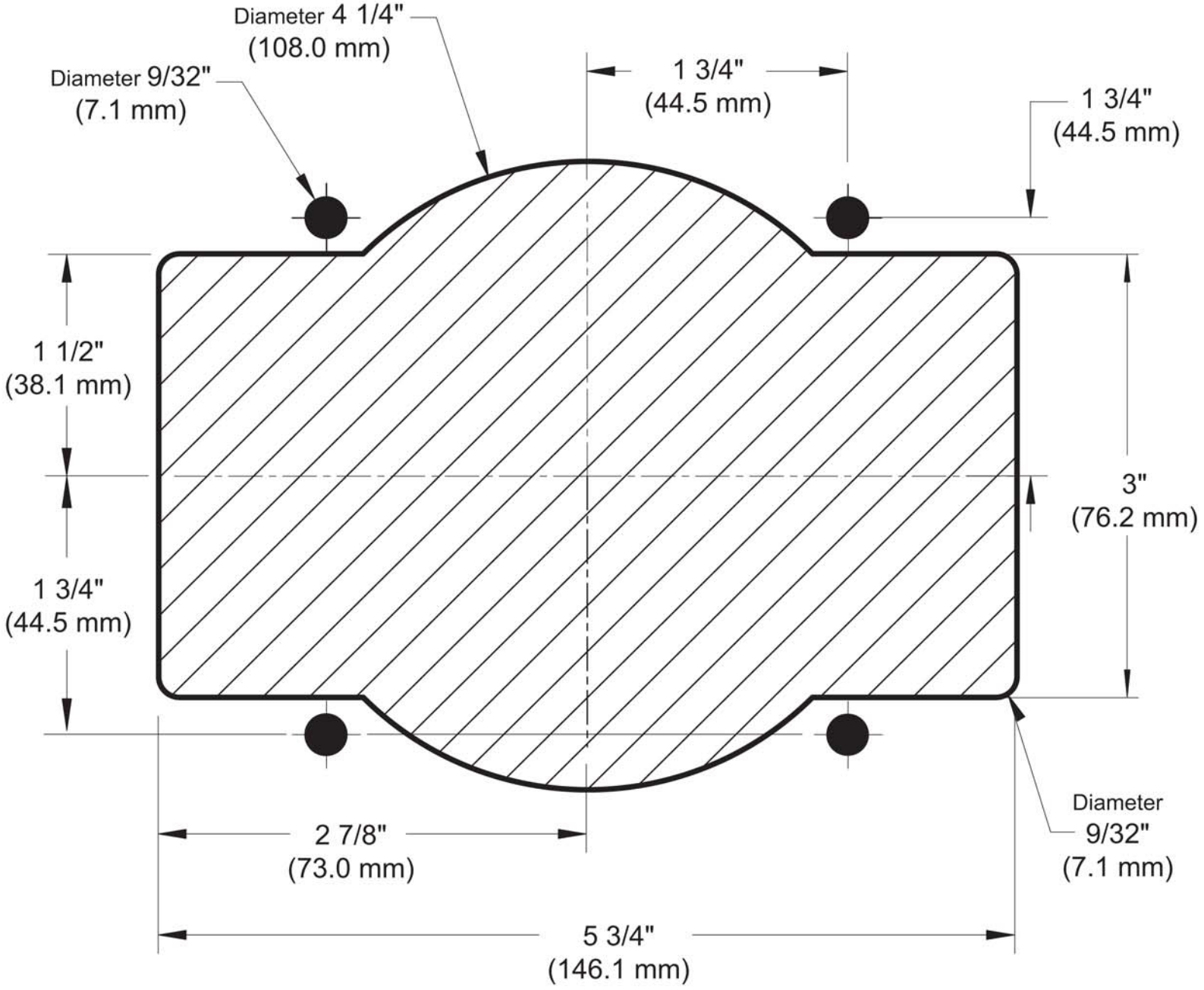
Kit #	Kit Name and Description	Model Used On …
212151-001	Cable Nest And Connection Kit	All
CH1700 Replacement Parts		
7212616	Chrome Replacement Handle without Trim	CH1700
7212710	Black Replacement Handle without Trim	CH1700
7213017	Chrome Side Mount Insert Kit	CH1700
7213111	Black Side Mount Insert Kit	CH1700
7213214	Throttle Only, Button Kit Side Mount	CH1700
CH7500/CH7600 Replacement Parts		
7213318	Chrome Replacement Handle without Trim	CH7500
7213411	Black Replacement Handle without Trim	CH7500
7213712	Chrome Replacement Handle without Trim	CH7600
7213816	Black Replacement Handle without Trim	CH7600
7214113	Chrome Top Mount Cover	CH7500; CH7600
7214311	Chrome Top Mount Insert Kit **with or without Tilt**	CH7500; CH7600
7214518	Black Top Mount Insert Kit **with or without Tilt**	CH7500; CH7600
7214715	Neutral Throttle Warm-up Kit (Top Mount)	CH7500; CH7600

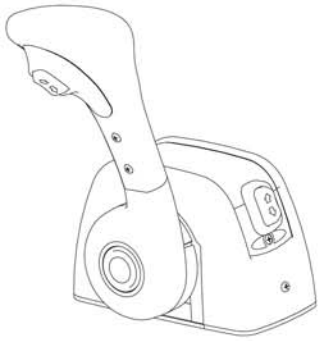


CH1700 Mounting Template
Side Mount Control

NOTICE:

THIS TEMPLATE MAY NOT BE TO SCALE. ITS PRESENCE IS FOR INFORMATION PURPOSES. A SEPARATE WORK TEMPLATE -- **MT_CH17_75_76 Rev 0 --** HAS BEEN INCLUDED WITH THIS CONTROL.

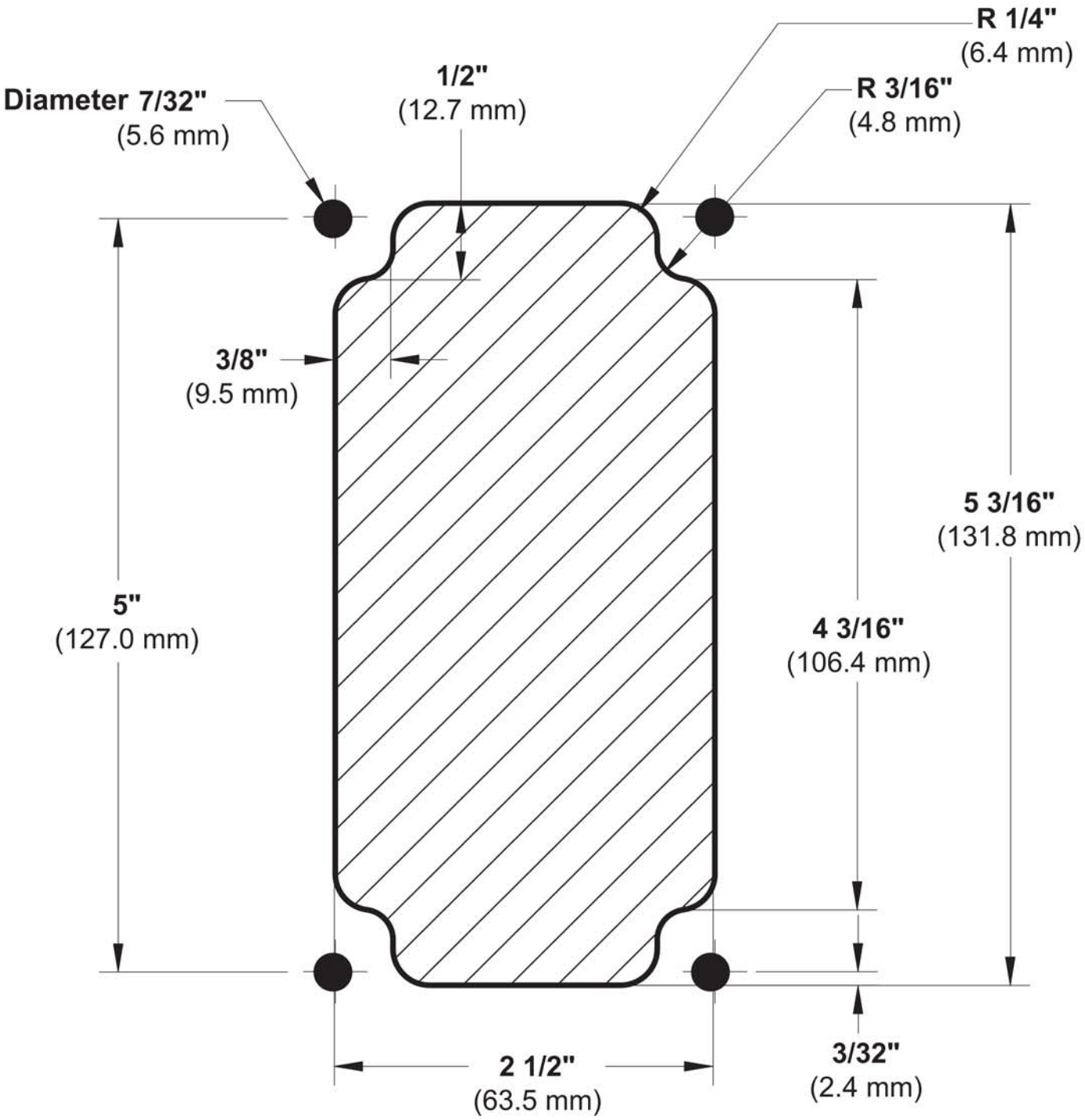


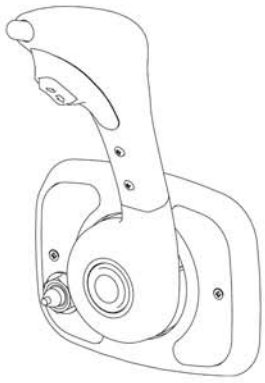


CH7500 and CH7600 Mounting Template
Top Mount Single Lever Control

NOTICE:

THIS TEMPLATE MAY NOT BE TO SCALE. ITS PRESENCE IS FOR INFORMATION PURPOSES. A SEPARATE WORK TEMPLATE -- **MT_CH17_75_76 Rev 0 --** HAS BEEN INCLUDED WITH THIS CONTROL.

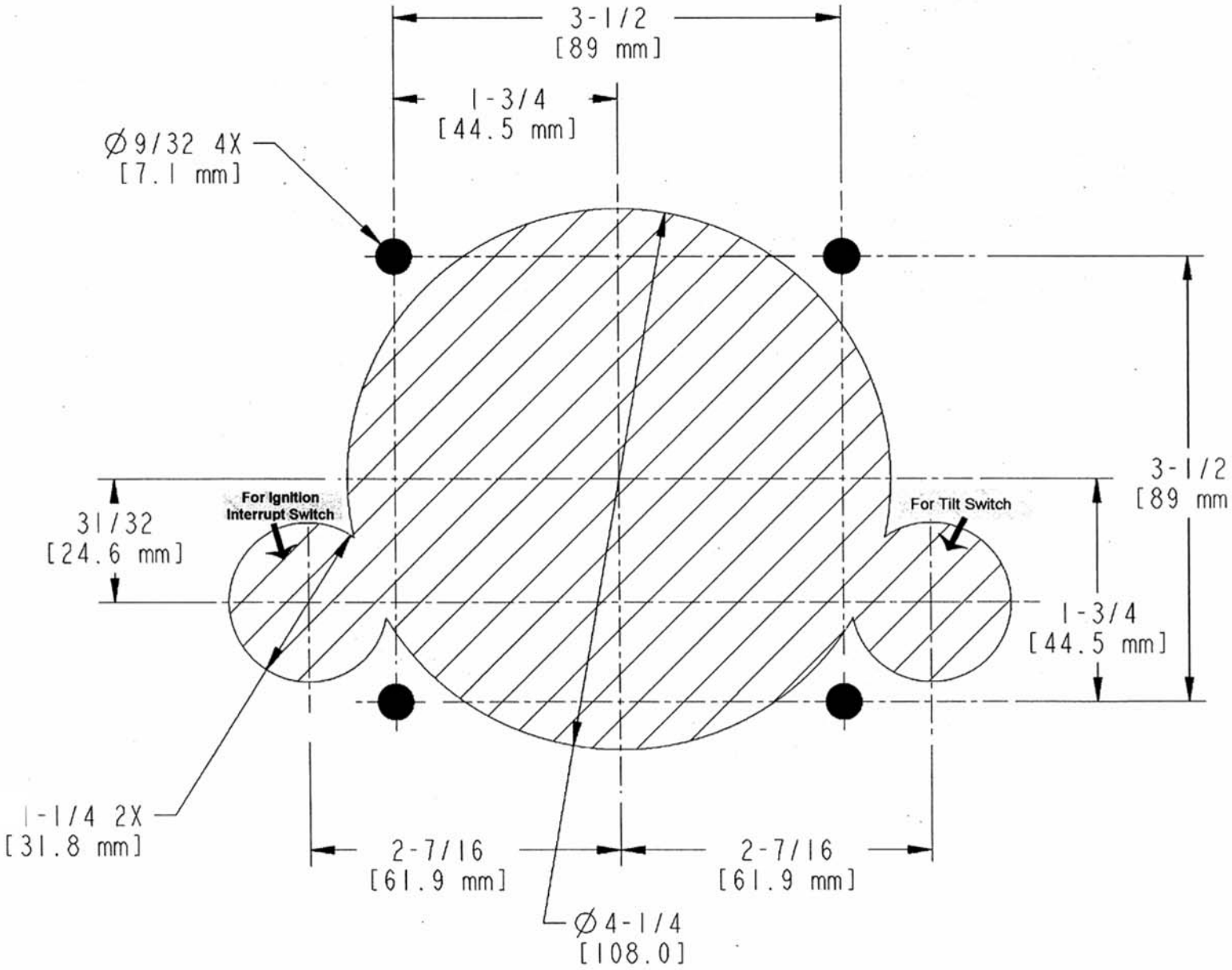




CH1700 Mounting Template
Side Mount Control
Back Mount Installation

NOTICE:

THIS TEMPLATE MAY NOT BE TO SCALE. ITS PRESENCE IS FOR INFORMATION PURPOSES. A SEPARATE WORK TEMPLATE -- **MT_CH17_BACKMOUNT --** HAS BEEN INCLUDED WITH THIS CONTROL.



CH1700/CH7500/CH7600
Mechanical Engine Controls

(Patent No. D508,227; D510,310; D510,311; D510,558; D510,559, D510,557)

User Manual

Operation & Instructions

Part Number: ISCH7500_Rev2

January, 2006

APPLICABLE STANDARDS

ABYC P-14, Propulsion Control Systems

USCG 33 CFR Part 183, Subpart “L”, “Start in Gear Protection”

SAFE BOATING STATEMENT

This device meets or exceeds the applicable ABYC, ISO, and USCG safe boating rules, regulations, standards, and guidelines.

SAFE BOATING ON THE WEB

U.S. Coast Guard: www.uscg.mil

U.S. Power Squadron: www.usps.org

American Boat & Yacht Counsel: www.abycinc.org

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